

What is claimed is:

1 1. A fuel cell system comprising:
2 a fuel cell subsystem comprising a fuel cell stack adapted to furnish power to a
3 load;
4 a battery;
5 a first circuit adapted to connect the battery to the load when the fuel cell
6 subsystem substantially delays in responding to a change in the power;
7 a current sensor to indicate a current through the fuel cell stack; and
8 a second circuit coupled to the current sensor to monitor cell voltages of the fuel
9 cell stack, determine the minimum of the cell voltages and prevent the current from
10 exceeding a maximum threshold current based on the minimum cell voltage.

1 2. The fuel cell system of claim 1, wherein the first circuit is further adapted
2 to disconnect the battery from the load when the fuel cell subsystem responds to the
3 change.

1 3. The fuel cell system of claim 1, wherein the fuel cell subsystem comprises:
2 a fuel cell stack adapted to receive a hydrogen flow; and
3 a fuel processor to produce the hydrogen flow.

1 4. The fuel cell system of claim 3, wherein the fuel cell subsystem further
2 comprises:
3 a controller adapted to monitor the power and regulate a rate at which the fuel
4 processor produces the hydrogen flow based on the monitored power.

1 5. The fuel cell system of claim 1, wherein the first circuit is further adapted
2 to connect the battery to the load based on a fuel cell stack voltage of the fuel cell
3 subsystem.

1 6. The fuel cell system of claim 1, wherein the first circuit comprises:
2 a first diode to couple the battery to the fuel cell subsystem when a stack voltage
3 of the fuel cell subsystem is near a predefined threshold voltage.

1 7. The fuel cell system of claim 1, wherein the second circuit comprises:
2 a voltage regulator adapted to regulate a stack voltage of the fuel cell stack and
3 limit the current through the stack.

1 8. A method comprising:
2 using a fuel cell stack to furnish power to a load;
3 connecting a battery to the load in response to the fuel cell stack substantially
4 delaying when responding to a change in the power;
5 monitoring a current through the fuel cell stack;
6 monitoring cell voltages of the fuel cell stack;
7 determining the minimum of the cell voltages; and
8 preventing the current from exceeding a maximum threshold current based on the
9 minimum cell voltage.

1 9. The method of claim 8, further comprising:
2 disconnecting the battery from the load when the fuel cell subsystem responds to
3 the change.

1 10. The method of claim 8, further comprising:
2 monitoring the power;
3 producing hydrogen;
4 regulating a rate of the production in response to the monitoring; and
5 providing the hydrogen to a fuel cell stack of the system.

1 11. The method of claim 8, further comprising:
2 connecting the battery to the load based on a fuel cell stack voltage of the fuel cell
3 subsystem.

1 12. The method of claim 8, further comprising:
2 connecting the battery to the load when a stack voltage of the fuel cell subsystem
3 is near a predefined threshold voltage.

1 13. The method of claim 8, further comprising:
2 using a voltage regulator to regulate a stack voltage of the fuel cell stack and limit
3 the current through the stack..

1 14. A fuel cell system comprising:
2 a fuel cell subsystem adapted to measure a lowest cell voltage and further
3 adapted to furnish power to a load, wherein the fuel cell subsystem is connected to the
4 load through a diode;
5 a fuel processor subsystem adapted to furnish reformat to the fuel cell
6 subsystem; and
7 a supplemental power subsystem adapted to furnish power to the load
8 when the lowest cell voltage drops below a predefined threshold voltage, wherein the
9 supplemental power subsystem is connected to the load through a diode.

1 15. A fuel cell system comprising:
2 a fuel cell subsystem adapted to measure a lowest cell voltage and further
3 adapted to furnish power to a load, wherein the fuel cell subsystem is connected to the
4 load through a diode;
5 a fuel processor subsystem adapted to furnish reformat to the fuel cell
6 subsystem;
7 a supplemental power subsystem adapted to furnish power to the load
8 when the lowest cell voltage drops below a predefined threshold voltage, wherein the
9 supplemental power subsystem is connected to the load through a diode; and
10 a controller adapted to monitor the power and regulate a rate at which the
11 fuel processor produces the hydrogen flow based on the monitored power.

- 1 16. The fuel cell system of claim 15, further comprising:
2 a predefined threshold voltage of -0.35 volts.
- 1 18. The fuel cell system of claim 15, further comprising:
2 a predefined threshold voltage of more than -0.4 volts.
- 1 19. The fuel cell system of claim 15, further comprising:
2 a predefined threshold voltage of more than -0.5 volts.